Outline

- Chi-Chi Earthquake
- Construction process and concept of earthquake museum
- Earthquake museum gallery
- Science education activity
- Management
- Conclusions

Chi-Chi Earthquake

- Date and Time: Sep 21, 1999, 1:47am
- Depth: 8.0 km
- Richter magnitude scale (M_I): 7.3
- Moment magnitude scale (M_w): 7.6
- Fault length: about 100 km
- Duration of the main shock: 90 sec

Chi-Chi Earthquake

- Disaster area: Central Taiwan
- Death: 2,455; Missing: 50; Seriously injury: 758
- Collapsed Houses: 50,644
- Half Collapsed Houses: 53,317

Construction Process and Concept of Earthquake Museum

Origin

- Memorization: The people die in Chi-Chi earthquake
- Reflection: the mistake of the past
- Education: to establish correct disaster prevention education material

Policy Decision

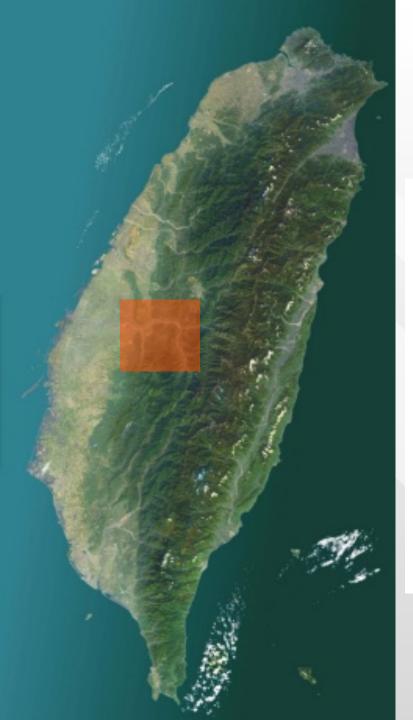
- The Earthquake Post-Disaster Recovery
 Commission decided to establish museum on 16
 Nov 1999.
- Ministry of Education invite Ministry of the Interior, Council for Cultural Affairs and National Science Council to feasibility assessment this project.

Location Selection Criteria

- 1.The collapse building and the fault; standard EQ sites
- 2.convienint
- 3. Settlements degree the plan
- 4.sustainable management

Final Dicision to Establish

- Choice locations: Taichung City, Taichung County, Nantou County.
- Kuangfu Junior High School in Taichung County was chosen as the site of the museum.
- Last decision: The fault cross the track field of the school; separate the school to two part; collapse buildings; river embankment fracture and raised up 2M, track field fractue and raised up 3M; the length of fault is 340M.



Position

9

斷層切過基地

THE FAULT AND THE SITE



The general situation of the process_

- 1.The first stage: NT\$ 1.5 billion;
- Fault gallery; Imagine gallery:
- Open on 21 sep 2004
- 2. The second stage: NT\$ 6.5 billion
- Engineering gallery; Disaster prevention gallery;
 Reconstruction gallery ;parking area
- Open on 21 sep 2007
- 3.Total budgets : NT\$ 8 billion

goal

Education center

the next EQ

protect himself on

Correct EQ knowledge

Disaster prevention



center

EQ exhibition

preserve the memory

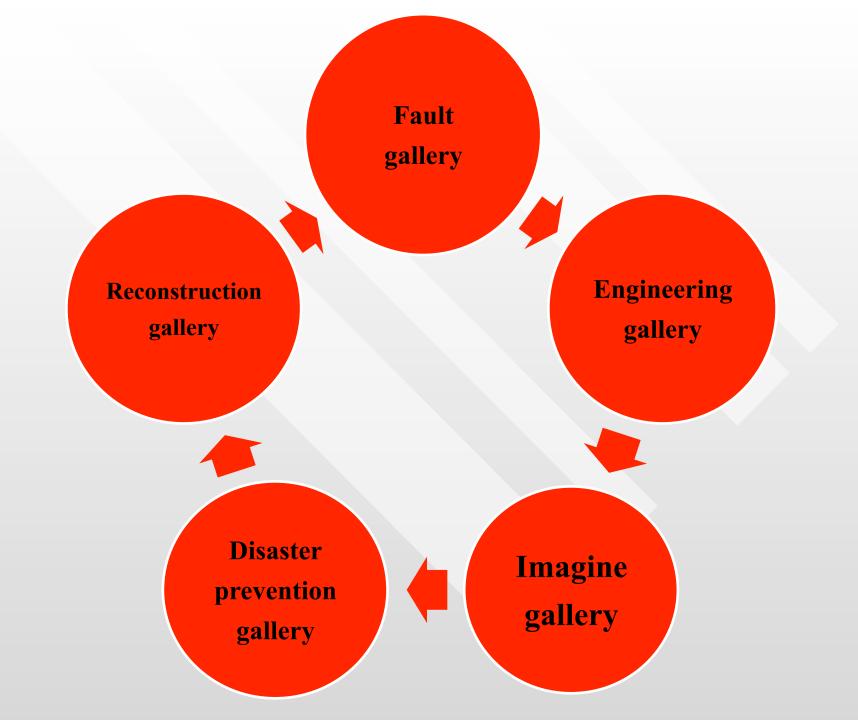
To promote EQ Knowledge



Design Concept

prepare for the future Remember history Resconstruction Faulty gallery Engineering Imagine Disaster gallery gallery Prevention gallery gallery Disaster Reconstruction Explain Remember Building prevention experience the EQ the EQ structure Attract the now past Face to the future visitor 1stage 1stage 2stage 2stage

• Earthquake museum gallery



Fault Gallery

15

- Explain the causes of Chi-Chi EQ
- Chelungpu fault exhibition.
- To preserve the earthquake site:connect the public collective memory, through the landscape and exhibiton to realize the earth science.

車籠埔斷層展示館

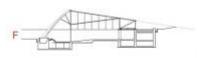
CONSERVATION HALL OF THE FAUL







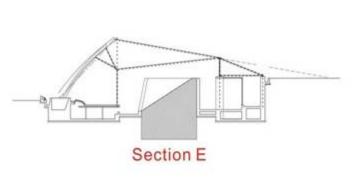












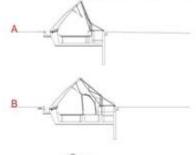


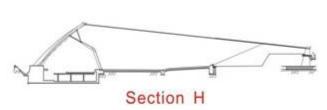


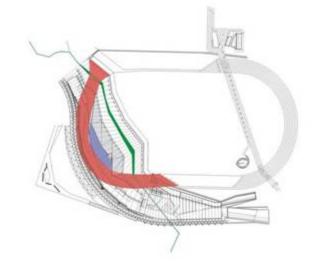


車籠埔斷層展示館

CONSERVATION HALL OF THE FAULT



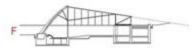
























VIEW OF CONSERVATION HALL

記憶

MEMORY

零時間下的事件串連 用空間與大地的互動 涵蓋事件的本身 串聯起一條零時間的軸,將時間凝結 空間與地景事件的互動 地景/記憶

Stringing events together in a timeless manner
Space and the earth interact
An axis independent of time
Space Interacts With Topography
Topography & Memory: Intertwined



THE BROKEN PU TRACK



A GREEN RIBBON ON THE FAULT



THE BROKEN PU TRACK



EVENT4 觀測井了解土壤錯位 INSPECTION OF THE EARTH AND THE UPLIFT



EVENT5 河堤斷裂 THE BROKEN RIVER EMBANKMENT









Engineering Gallery

- Collapse building → Security building
- Laboratory concept:Interactive display the building stucture
- Exhibition topics: Security building, shock absorption of advanced building technologies: security urban plan.
- Exhibition themes: Establishing security building; interactive structure modle; interactive shock absorption of advanced building technologies; public engineering seismic technology and contingency measures.

Engineering Gallery

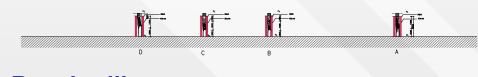
- Conserve the collapse building; exhibit the repair methods and anti-seismic techniques → To explain the reasons of collapse → The improvement strategy.
- Purpose: To teach how to built the anti-seimic building and design the anti-seimic urban plan.

Collspse buildings





Conserve Collapse pillers

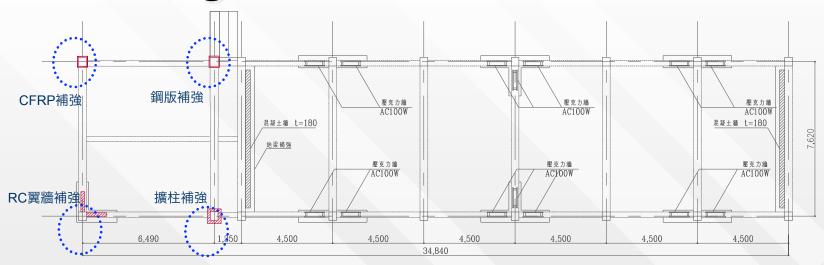


Outdoor exhibition

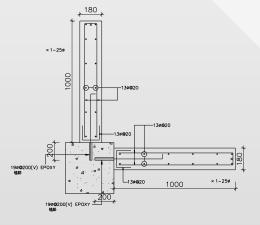


Collapse piller

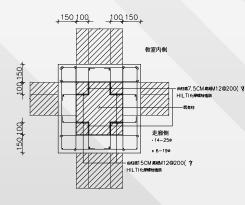
Reinforcing construction exhibition



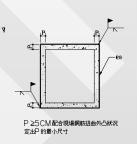
Outdoor exhibitions



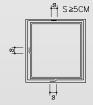
wing walls, reinforcing construction method



column
reinforcement
extended
construction
method?



steel plate reinforced construction method



CFRP reinforcement construction method

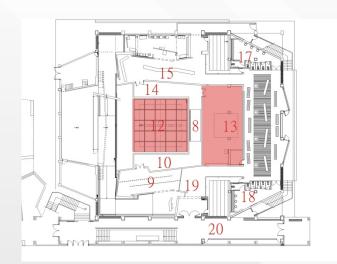
Imagine Gallery

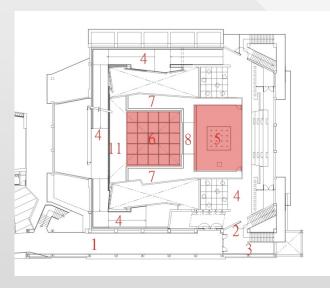
- Precious memoesy → Face to the future.
- Exhibition: the imagine of Chi-Chi earthquake
 - → Record the memory
- 3 theaters: To attract people visit our museum.

Imagine Gallery

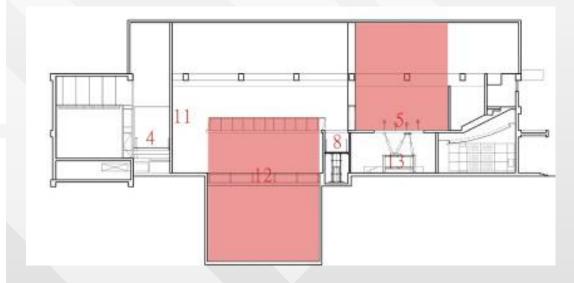
- 3-D Theater:4k high-resolution three-dimensional projection display the 3D movie,2 movies; open on sep 2009.
- Earthquake Theater: The room to simulated earthquake intensity 6, experience the EQ.
- Truth theater: A drama describe the resconstruction story of the affected households.

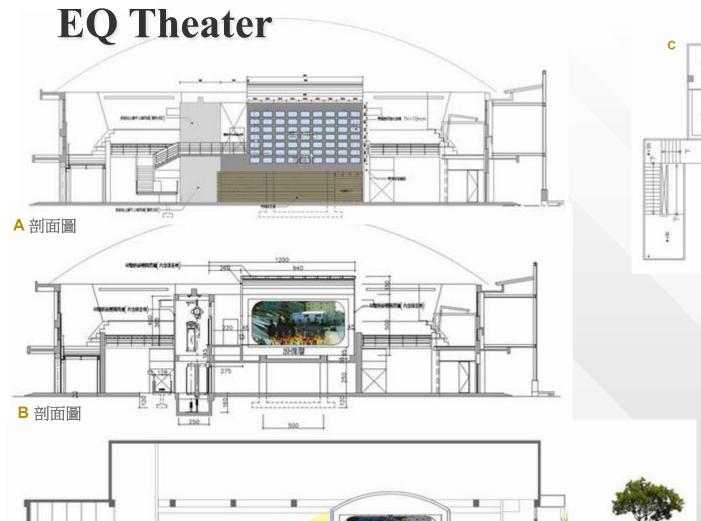
Theaters

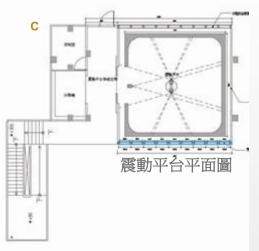




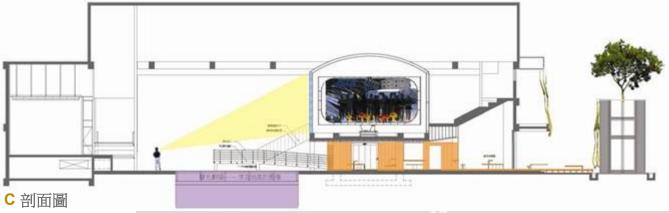
26













Disaster Prevention Gallery

- Purpose:Face to the future
- To establish a correct concept of disaster
 prevention °
- Exhibitiob: The force of the nature; simulation display area of collapsed buildings; Chi-Chi EQ story-telling room.

Disaster Prevention Gallery

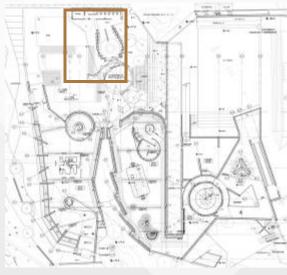
- Experience relief process exhibition
- Disaster journey to the west exhibition: To use the traditional shadow play exhibit the process of the disaster prevention; including fire, noise, earthquake, aloft work...., Open on 2009.

Outdoor CPR Zone















Reconstruction Gallery

- Purpose:Record the reconstruction process →
 Transmission rebuilding experience → The efficiency of the reconstruction process and correct reconstruction policy on the next EQ .
- 10 anniversity special exhibition of Chi-Chi EQ :
 Open on 21 Sep 2009

Reconstruction Gallery

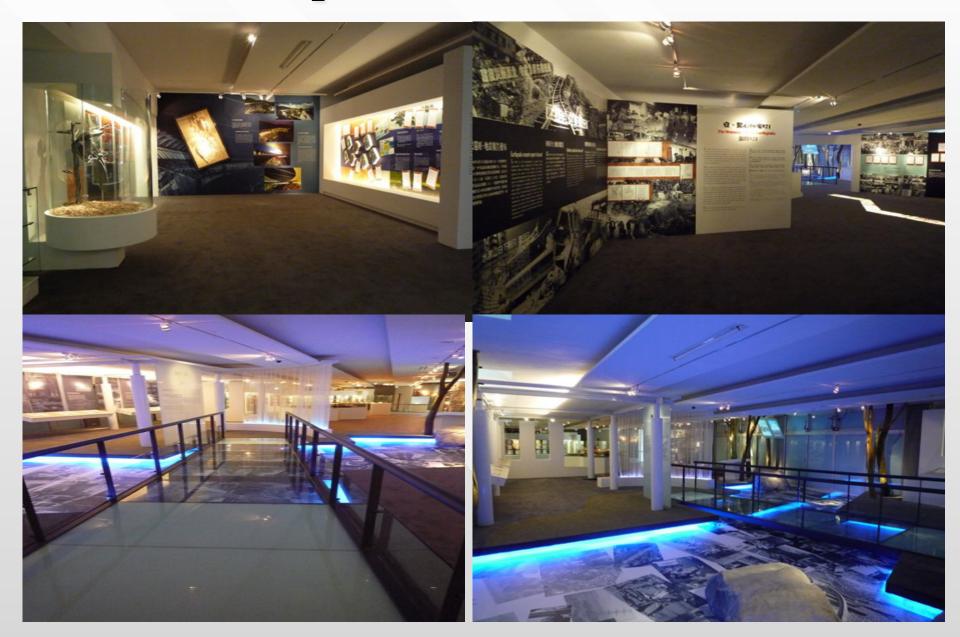
Five topics of the exhibition:

- 1. The moment: The emergency response measures of government, the process of search and rescue.
- 2.Policies and regulations: Government emergency disposal policy, Emergency Order and issued decrees, cadastral surveys, volunteers.

Reconstruction Gallery

- 3. Resettlement:Prefab, Rent subsidies and offers to buy the country house.
- 4.Reconstruction: Public works reconstruction, community renewal, the reconstruction of life and industry reconstruction.
- 5. Reflection and Change: Change building code, urban plan, Earthquake Insurance Foundation, Chi-Chi Earthquake Museum.

Special Exhibition



Science Education Activity

Science Education Activity

- ●1.First season→building structure
- ●2.Second season → geology
- ●3. Third season → disaster prevention
- ●4.Fourth season → blessing the memory
- Handled various activities in different seasons.

The first season activities

- Content:Building structure
- Monopoly
- Story Time-Three Pigs
- Dome Building
- Noodle Houses and Noodle Bridges





【安全的家大富翁遊戲】

迎新年,蓋新家,好觀念, 保平安,問與答,多考驗,玩遊戲,得知識, 紀念品,帶回去,安全家,守護你。

我戰擂台 921地震教育園區 地震工程教育館

活動主旨 頭戴建築帽,腳踏棋盤格,闖關大富翁,安全震不倒。

€動人數 每場5組,每組4-6人

拟名方式 網路報名



團體場次 | 2/4、2/11、2/18、2/25(週三下午2:30-3:30)開放30人以下的團體預約,活動前3天,若無團體預約,則該場次取消。



【三隻小豬蓋房子】

三隻小豬這次要面對的 不是破壞房屋的大野狼 面是比大野狼可怕上好幾倍的神祕力量 到底是什麼呢 老故事 新解釋

数事屋地址 921地震教育園區 地震工程教育館

動主旨 透過繪本故事解説,引導孩童了解地震帶來的災害,也為孩子建立正確的防災觀念!

活動人數 每場30人,額滿爲止。

1 名方式 網路報名





【小小建築師】

建築動起來,世界也搖擺 蓋屋搭橋任我「形」動動手轉轉腦 創意建築我最「行」

建築工地 921地震教育園區 研習教室

活動主旨 藉由輕鬆的課程帶著觀眾認識結構的基礎,並配合義大利麵跟吸管材料的應用,蓋出屬於自己的建築物!

活動人數 每場6組,每組3-4人

1 名方式 網路報名



好『家』在,震不倒,為什麼不倒? 動手做,Fun實驗,come to check it out!

∰验室地址 921地震教育園區 地震工程教育館

卷動主旨 透過模型教具的互動操作,加上豐富趣味地解說,大家一起來 學震不倒先生的抗震魔法!

動場次 每場5組,每組3-4人。
包含方式 網路報名

Monopoly











安全的家大富翁遊戲】











Story Time-Three Pigs











【三隻小豬蓋房子】





【三隻小豬蓋房子】

























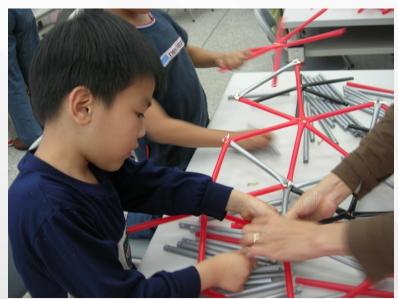








Dome Building









Dome Building









Noodle Houses













- ** 學術哲能: 陳小·早秋以上之學能及社會大眾: 5~3人一個: -
- 和食物料: 南北南州科學教育的
- REPORTED 1 1/8.
- # 3990000011p://www.nince.gov.iw/009000000010-12044100000-040
- 如何地数:於1地震表示解答 研究表示
- 初賽時間: 5/6 7/19 · 5/28 · 8/3 · 8/6 8/16 · 8/22 · 8/38
- 非常認治51(pr//www.101cm). refs. tw/被電台(NG)3339-80484914前小板
- 初期地區: 接京科學工業等時間
- **新聞的問: 8/23 8/26**
- 評価報告411p1//www.notal.gov. (n/病報告(07)288-488885(5)集先生
- 初前後期 (被立案機会表定批析
- 和審政第 : 7/4 : 7/11 : 7/18 : 7/23 : 6/1 : 8/8 : 8/15 : 8/22
- 3P他提供为11p://www.nap.gov.te/16期的1080/380-180#T00数小框

州縣:北川地図教育園區 **位于新疆域域於口村中市西亚城** WHEE: 2009 STREET LAND - 16:00 身体對象:各區被要由5名之機關保信

全国第一名: 國際契約定、應款一只 今國第二名 : 衛型別(60元 : 簡別一口 今回第二名: 標準別的化、開始一日 全域等四-五名: 體學1500元 - 物狀一日

Noodle Houses



















The second season activites

- Content: geology;earth science
- Hands-on Seismograph
- The rock cycle
- Earthquake Cattle opera
- Adventures of the gallery



ルニー地震10週年之 (本学) 10週年之 (本学) 1000年 (本学) 4/1~6/30 週六/上午10:00~11:00 [震在ING] 下午13:30~14:30 [地牛傳說]

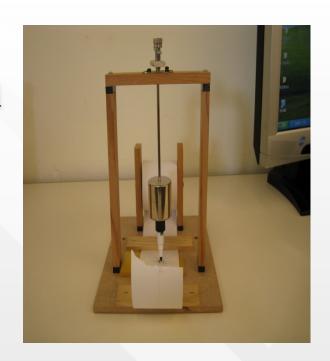
週日/上午10:00~11:00【石石相關】

下午13:30~14:30【話石畫石】

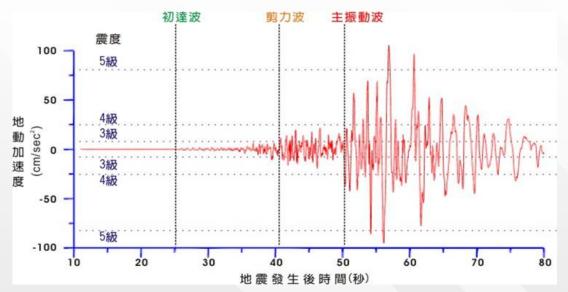
921地震教育園區

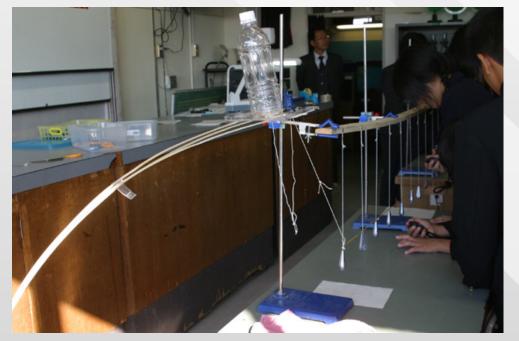
Hands-on Seismograph







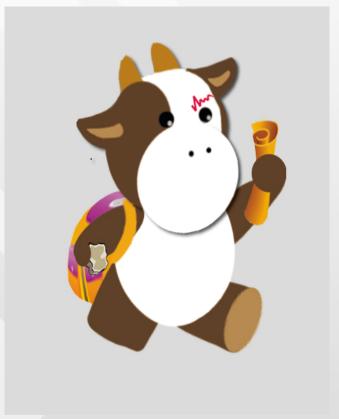




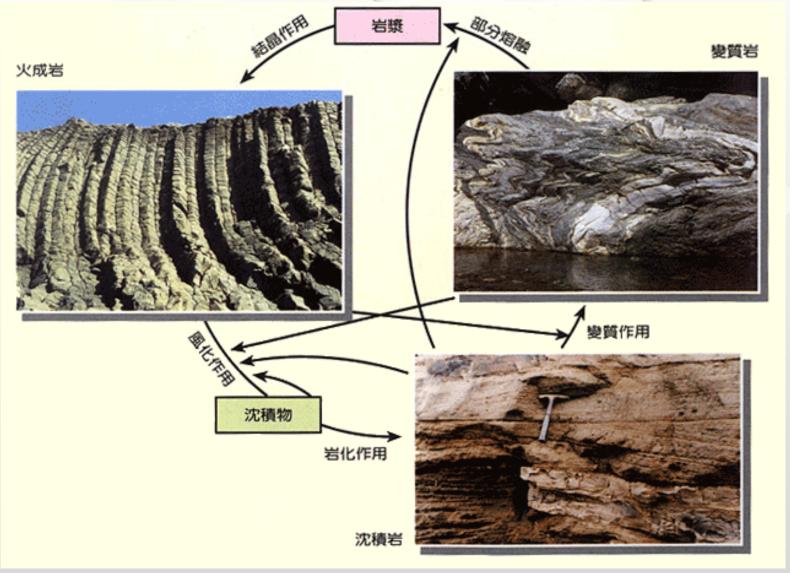
| | 震度分級 Intensity Scale | | 地動加速度範圍 Peak Ground Acceleration | 1gal = 1cm/sec² |
|--|-------------------------|----------------------|--|-----------------|
| | 0 | 無感 Not felt | 0.8gal 以下 Below 0.8gal | |
| | 1 | 微震 Weak | 0.8~2.5 gal | |
| | 2 | 輕震 Light | 2.5~8.0 gal | |
| | 3 | 弱震 Mild | 8.0~25 gal | |
| | 4 | 中震 Moderate | 25~80 gal | |
| | 5 | 強震 Strong | 80~250 gal | |
| | 6 | 烈震 Severe | 250~400 gal | |
| | 7 | 劇震 Extreme | 400gal 以上 Above 400gal | |

Earthquake Cattle Opera



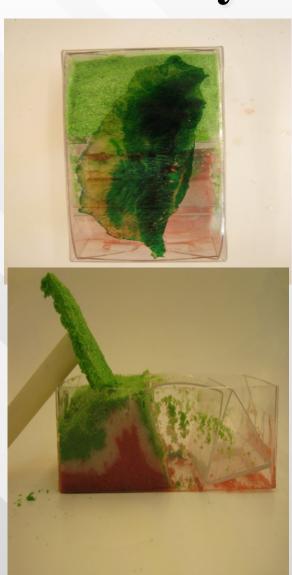


The rock cycle activity



Metamorphic rock and Sedimentary rock activity





Hands-on toys





Adventures of the gallery





火成弓箭

火成弓箭,由火成岩魔鍊而成的實物。被火成弓箭射中的物體,會立刻熔化消失不見。火成岩,是岩漿冷卻凝固而成。你知道嗎~台灣常見火成岩種類有:安山岩、玄武岩、花崗岩。

92 7 地震教育機器 41364台中縣霧峰総坑口村中正路46號 Tel 104-23390906/Fax 104-23397401 http://www.921emt.edu.tw



可以隨心所欲改變外觀的變質斗篷,是由變質岩 提鍊而成的實物。變質岩,是沉積岩或火成岩, 經高溫、高壓後,改變化學成分而形成的岩石。 你知道嗎~台灣變質岩,主要分布在中央山脈。

> 92 1 地震教育機器 41364台 中無護職 総収に1世中正路46號 Tel:04-23390906/Fax:04-23397401



沉積魔杖

擁有召喚化石精靈魔力的沉積魔杖,是由<mark>沉積岩</mark> 鑄造而成的寶物。沉積岩,是岩石風化後的產物 ,再由搬運、堆積、壓理、膠結等地質作用形成 。你知道嗎~沉積岩,是台灣分布最廣的岩石。



The third season activities

- Content: Mud flow
- Story Time-Planted Trees
- The Critical Moment
- Emergency Contact Card
- Rain barrel
- Emergency Evacuation backpack
- Hands-on Mudflow dam
- CPR

Story Time-Planted Trees





Story Time-Planted Trees







The Critical Moment











Emergency Contact Card









Rain barrel









Emergency Evacuation backpack







Hands-on Mudflow Dam











CPR









The fourth season activity

- Content:memory and blessing
- Worksheets-About the memory
- Blessing Card
- Story Time
- The Next Critical Moment





・活動主旨 | 讀繪本 聽故事 愛生命

• 活動 日期

10/3 \ 10/10 \ 10/17 \ 10/24 \ 10/31 \ 11/7 \ 11/14 \ 11/21 \ 11/28 \ 12/5 \ 12/12 \ 12/19 每周六 14:00~14:30

09:00~16:00(12:30~13:30中午暫停)

・活動人數限制 | 共1260名,額滿截止

共同打造1260份心意的巨大拼圖

· 活動日期 | 98/9/21開始

活動詳情及報名方式,請至921地震教育園區網站http://www.921emt.edo.tw 或電(04)23390906轉923洽詢

Worksheets-About the memory



由可愛的快閃家族,帶領觀眾穿越過去與現在,重新回顧 921地震,再次感受台灣人民的強韌,並學習感恩惜福。

活動步驟:

1

於影像館服務台索取導覽學習單。 依照指示完成學習單。 (需費時約15~20分鐘)

完成學習單後,答案正確者,即可於近影像館出 口處之「希望兌換站」,換取精美小禮一份。

注意事項:

2

- *活動時間:09:00~16:00
- *12:30~13:00請改至影像館入口服務台兌獎
- *16:30後停止兌換,請把握時間

Worksheets-About the memory













Blessing Card



無論是十年前的921地震,還是前陣子的88水災,都在大家的心中留下深刻的記憶,讓我們一起來「用心動手做,打開心扉,寫下祝福,讓這1260份心意共同守護台灣,創造巨大拼圖的奇蹟吧!」

活動步驟:

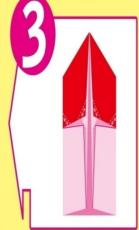
- 1. 請選擇未被放置祝福卡的號碼。
- 2. 請將號碼卡拿至活動服務台,領取摺纸材料~~動手做愛心囉!
- 3. 按照摺纸步驟完成愛心祝福卡,於內側寫下對台灣、世界、受災者等的祝福。
- 4. 將完成的祝福卡交至活動服務台換取幸福書籤。
- 5. 最後請將祝福卡拉置於您所選取的號碼方格中~~感謝您成為其中一份子!

主意 活動時間:09:00~16:00(12:30~13:30中午暫停!不便之處,敬請負諒!)

|活動人數限制:共1260名,額滿截止。|參加活動所需時間:約10~15分鐘|







Blessing Card













Story Time-Say Goodbye to Friends













Story Time-Wings of Hope











Story Tims-The Gift from Friends





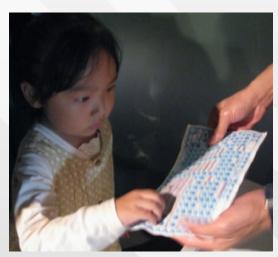






The Next Critical Moment











• Management

Management

- Disaster imagine: rupture of the earth, collapse building, falling bridge, fire → Tear, collapse, dangerous, rupture.
- Our hope:Sutre,safe,steady, warm,rebuilt
- •Building concepts:
- Sutre, reason of the EQ, safe building, memory, disaster prevention, reconstruction.

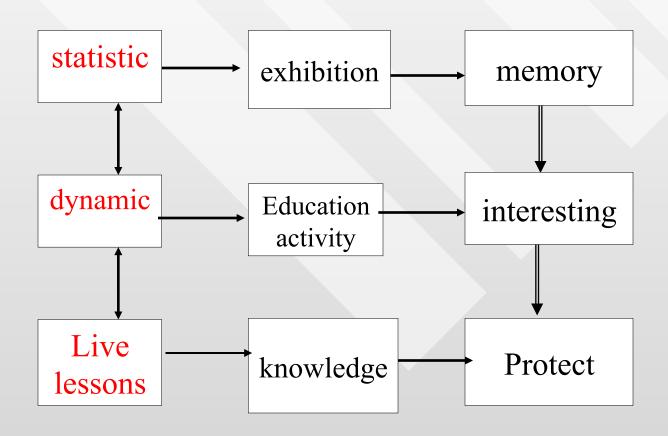
Management

 Management concepts:diversity, simplified, system, earth science, EQ resistance building, memory, disaster prevention, reconstruction.

How to face the future?

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Education methods are the best way. We translate the memory into education material.



Management

- Direction: Science and disaster prevention education
- High quality Interpretation service
- Science and disaster educational activities on every weekends.
- The victims of the natural disaster become the volunteers that provides their diaster experience to visters.

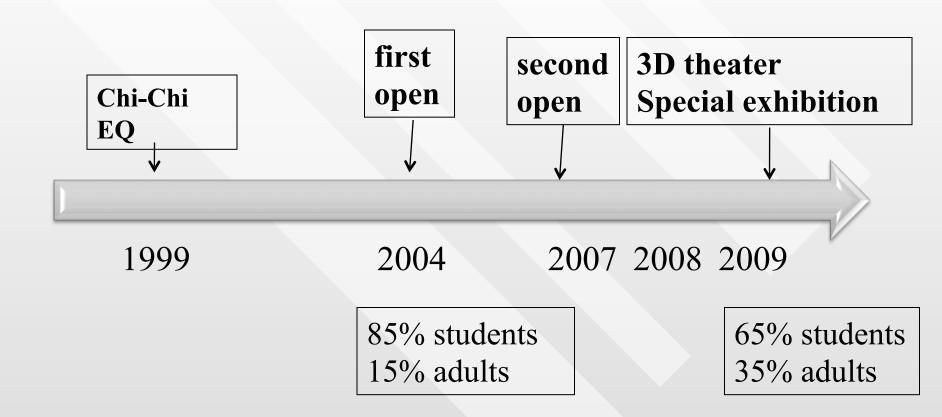
Management

- The volunteers response the interpretation service and education activity
- Every gallery has the Disaster Preventation
 Education Cornor.
- Offer earth science, EQ and disaster prevention education materials to school-based services
- Disaster school→Science education base
 →Disaster prevention base

Visitors and ticket sales

| year | visitors | Ticket sales |
|------|----------|----------------|
| 2007 | 316,558 | NT\$ 2,229,350 |
| 2008 | 352,763 | NT\$ 4,530,430 |
| 2009 | 347,274 | NT\$ 4,539,530 |

Visitor Structure



- Purpose: Through the natural sciences, humanities, history, the three presentation-oriented and educational activities, awareness of the natural phenomenon of earthquakes; understanding the origin of the disasters and the nature stress; establish a correct concept of disaster prevention; to learn how to proctect himself and help each others; reduce future earthquake losses.
- Value: After 10 years, we save earthquake ruins here and others disapper, we save earthquake memory and help people face to their future.

- To establish an earthquake museum is important →
 Disaster prevention education → Reduce future
 earthquake losses
- The exhibition content must be diversity to sustainable management
- The exhibition of the fault section strength the value of earth science.
- Try to translate the memory into the Education material.
- Adjust the sad memory, turn to the hope of the reconctruction.

- Disaster prevention education is the hope of the future, so develop the interested disaster prevention education activities is a necessary investigation.
- The investigation of the disaster prevention education is the cheapest way to the society.
- The volunteers who are victims of a natural disaster help the society stand firm.

Thank you!